Color and Luminous Intensity

(Ta=25℃)

Part No.	Material	Emitted Color	Lens Color	Dominant Wavelength λd (nm)		Luminous Intensity Iv (mcd)		
				TYP.	I_F(mA)	MIN.	TYP.	I_F(mA)
SB1105W	InGaN	Blue		470	10	150	330	10
HUB1105W	InGaN	Blue	Water Clear	470	10	70	200	10
SG1105W	InGaN	Green		530	10	680	1500	10
HUG1105W	InGaN	Green		530	10	200	560	10
UY1105W	AlGaInP	Yellow		590	20	140	500	20
UR1105W	AlGaInP	Red		630	20	140	500	20

Absolute Maximum Ratings

(Ta=25℃)

Item	Symbol	Absolute Maximum Ratings						Unit
		SB	HUB	SG	HUG	UY	UR	
Power Dissipation	P_d	70	78	70	78	87	87	mW
Forward Current	I_F	20	20	20	20	30	30	mA
Pulse Forward Current ※1	I_{FRM}	48	48	48	48	100	100	mA
Derating (Ta=25℃ or higher)	ΔI_F	0.26	0.28	0.26	0.28	1.00※2	1.00※2	mA/℃
	ΔI_{FRM}	0.64	0.69	0.64	0.69	3.33※2	3.33※2	mA/℃
Reverse Voltage	V_R	5	5	5	5	5	5	V
Operating Temperature	T_{opr}	-40～+85				-40～+100		℃
Storage Temperature	T_{stg}	-40～+100				-40～+120		℃

※1 I_{FRM}Measurement condition : Pulse Width≦1ms., Duty≦1/20. (UY,UR : Duty≦1/10)
※2 Temperature Condition : Ta=75℃ or higher.

Electro-Optical Characteristics(SB,SG,HUB,HUG) (Ta=25℃)

Item	Conditions	Symbol		Characteristics SB	HUB	SG	HUG	Unit
Forward Voltage	I_F=10mA	V_F	TYP.	2.9	3.4	2.9	3.4	V
			MAX.	3.4	3.9	3.4	3.9	
Reverse Current	V_R=5V	I_R	MAX.	100	100	100	100	μA
Peak Wavelength	I_F=10mA	λ_p	TYP.	465	465	522	522	nm
Dominant Wavelength	I_F=10mA	λ_d	TYP.	470	470	530	530	nm
Spectral Line Half Width	I_F=10mA	$\Delta\lambda$	TYP.	22	26	35	35	nm
Half Intensity Angle	I_F=10mA	2θ 1/2	TYP.	25	50	25	50	deg.

Electro-Optical Characteristics (UY,UR) (Ta=25℃)

Item	Conditions	Symbol		Characteristics UY	UR	Unit
Forward Voltage	I_F=20mA	V_F	TYP.	2.2	2.2	V
			MAX.	2.8	2.8	
Reverse Current	V_R=5V	I_R	MAX.	100	100	μA
Peak Wavelength	I_F=20mA	λ_p	TYP.	592	641	nm
Dominant Wavelength	I_F=20mA	λ_d	TYP.	590	630	nm
Spectral Line Half Width	I_F=20mA	$\Delta\lambda$	TYP.	18	18	nm
Half Intensity Angle	I_F=20mA	2θ 1/2	TYP.	50	50	deg.

Luminous Intensity Rank（Unit：mcd）

(Ta=25℃)

Tolerance : +/-10%

Rank	I_V(mcd)			
	SB		SG	
	I_F=10mA		I_F=10mA	
	MIN.	MAX.	MIN.	MAX.
CB	150	220		
CC	220	330		
CD	330	470		
CE	470	680		
CF	680	-	680	1,000
DA			1,000	1,500
DB			1,500	2,200
DC			2,200	3,300
DD			3,300	-

Rank	I_V(mcd)							
	HUB		HUC		UY		UR	
	I_F=10mA		I_F=10mA		I_F=20mA		I_F=20mA	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
A			140	280	140	280	140	280
B	70	140	200	400	200	400	200	400
C	100	200	280	560	280	560	280	560
D	140	280	400	800	400	800	400	800
E	200	400	560	1,120	560	1,120	560	1,120
F	280	560	800	-	800	-	800	-
G	400	-						

※ Please contact our sales staff concerning rank designation.

Color Tone Groups (λd)

(Ta=25℃)

Tolerance : +/-2nm

Rank	Dominant Wavelength λd (nm)			
	SB		SG	
	IF=10mA		IF=10mA	
	MIN.	MAX.	MIN.	MAX.
A	460.0	470.0	520.0	532.5
B	470.0	480.0	532.5	545.0

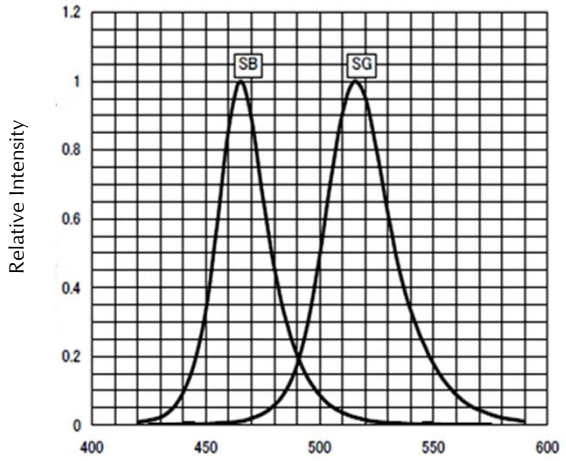
Rank	Dominant Wavelength λd (nm)			
	UB		UG	
	I_F=10mA		I_F=10mA	
	MIN.	MAX.	MIN.	MAX.
-	460	480	520	545

Rank	Dominant Wavelength λd (nm)			
	UY		UR	
	I_F=20mA		I_F=20mA	
	MIN.	MAX.	MIN.	MAX.
A	580	585	620	630
B	584	589	628	638
C	588	593		
D	592	597		
E	596	601		

※ Please contact our sales staff concerning rank designation.

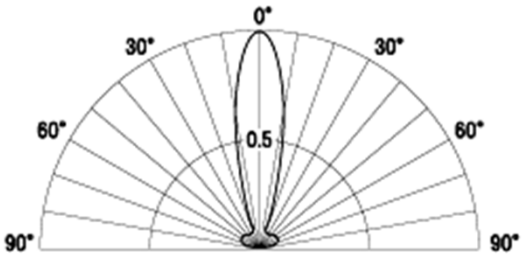
Technical Data(**SB,SG**)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : Ta = 25℃, I_F =10mA

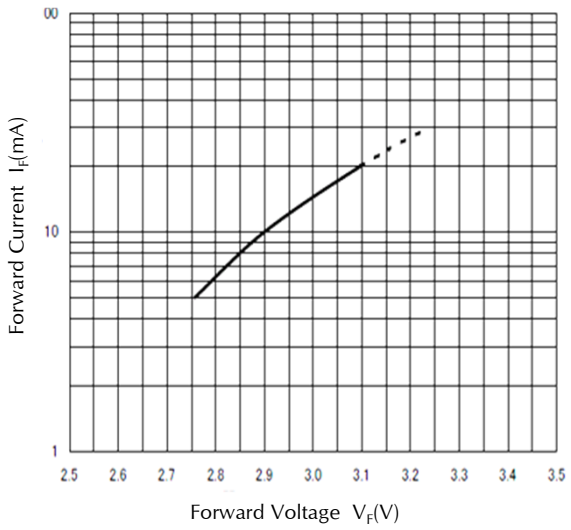


Spatial Distribution Example

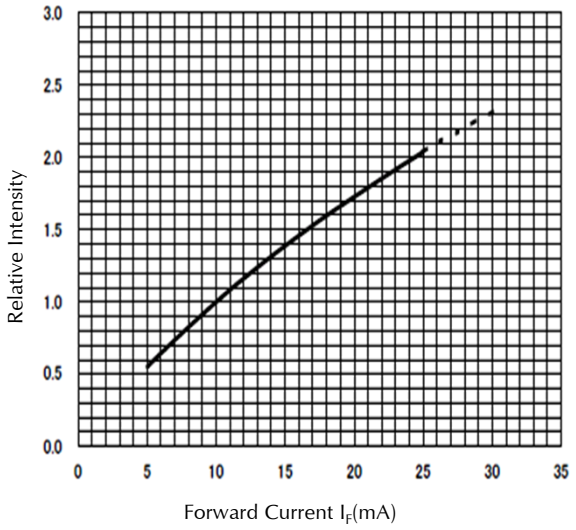
Condition : Ta = 25℃



Forward Voltage vs. Forward Current
Condition : Ta = 25℃



Forward Current vs. Relative Intensity
Condition : Ta = 25℃

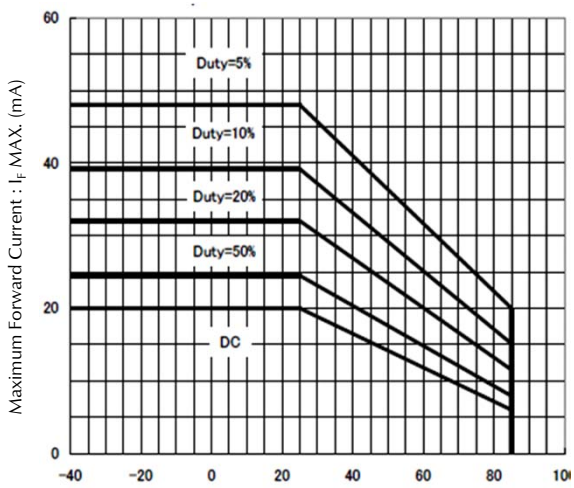


Technical Data(**SB,SG**)

Derating

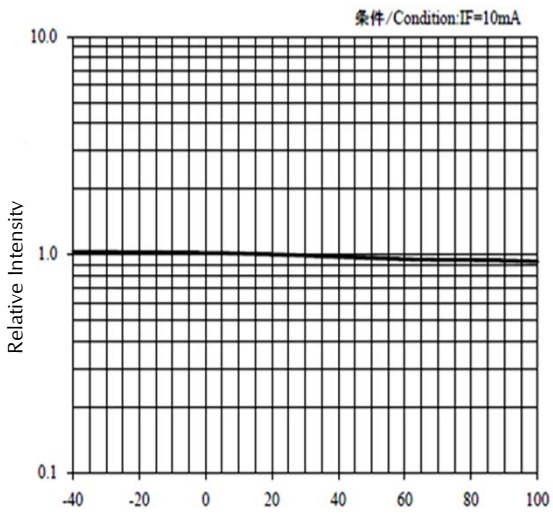
Ambient Temperature vs. Maximum Forward Current

Repetition Frequency : f ≧ 50Hz, Pulse Width tw≦1msec

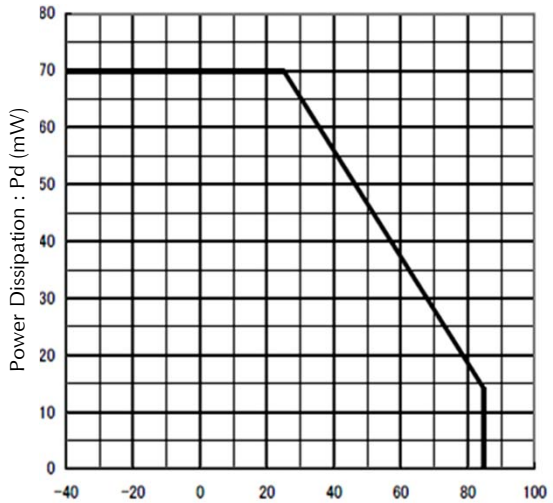


Ambient Temperature vs. Relative Intensity

Condition : I_F=20mA

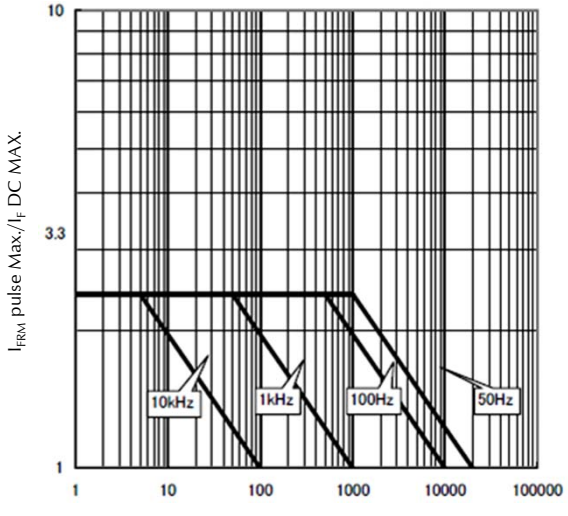


Power Dissipation vs. Ambient Temperature



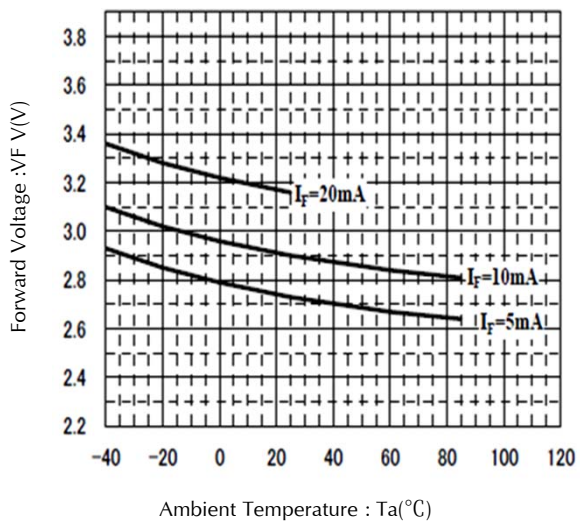
Pulse Width vs. Maximum Tolerable Current Ratio

Condition : Ta = 25℃

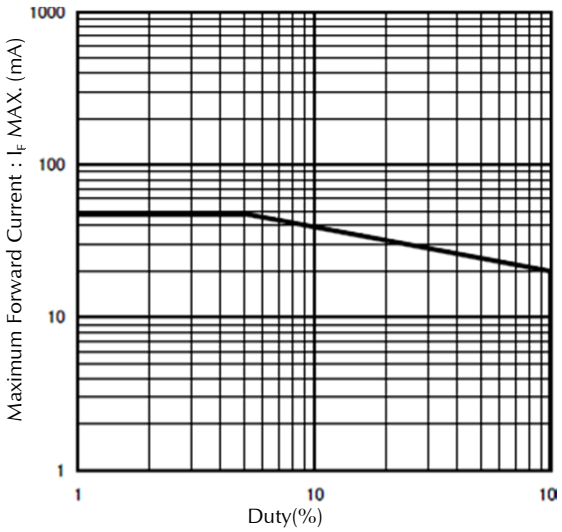


Technical Data(**SB,SG**)

Ambient Temperature vs. Forward Voltage
Condition : IF = 5～20mA

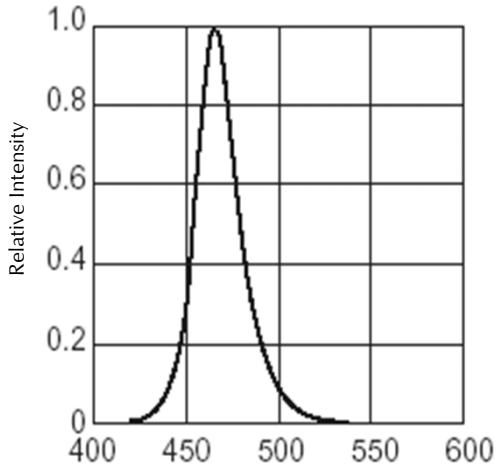


Duty Cycle vs. Maximum Forward Current
Condition : Ta = 25℃



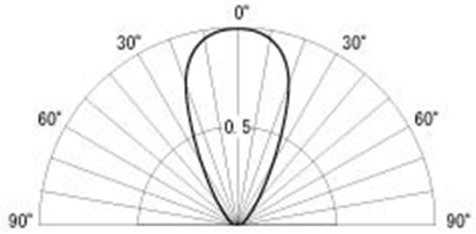
Technical Data(**HUB**)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : Ta = 25℃, I_F = 20mA

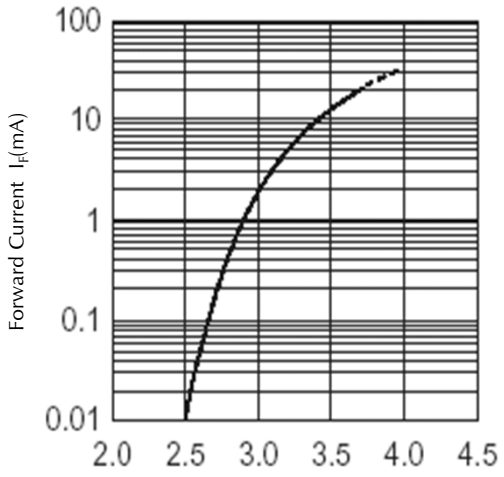


Spatial Distribution Example

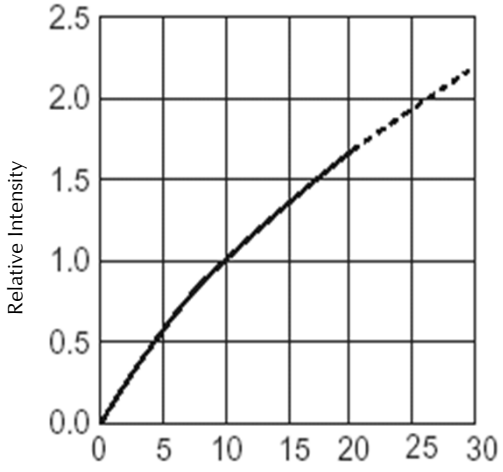
Condition : Ta = 25℃



Forward Voltage vs. Forward Current
Condition : Ta = 25℃



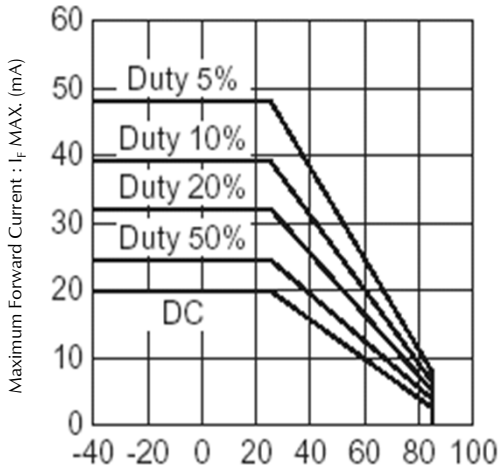
Forward Current vs. Relative Intensity
Condition : Ta = 25℃



Technical Data(**HUB**)

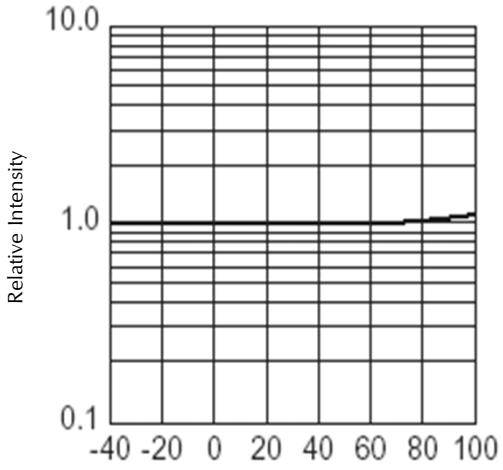
Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : f ≧ 50Hz

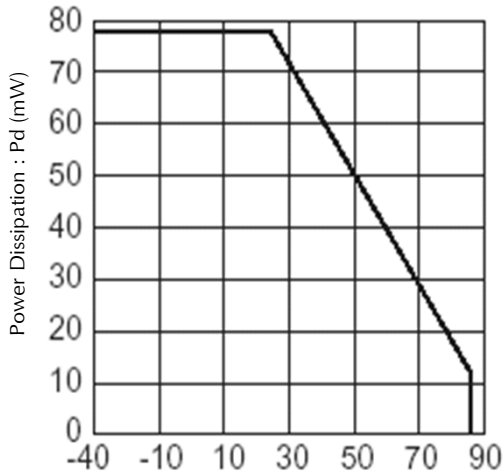


Ambient Temperature vs. Relative Intensity

Condition : I_F=20mA

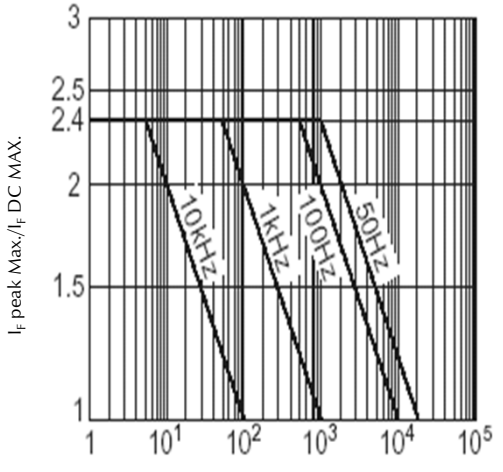


Power Dissipation vs. Ambient Temperature



Pulse Width vs. Maximum Tolerable Peak Current

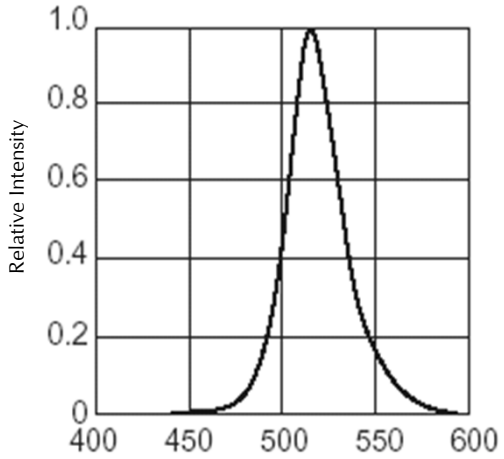
Condition : Ta = 25℃



Technical Data(**HUG**)

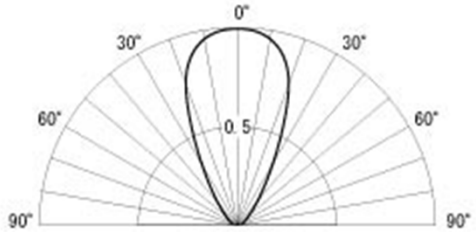
Spectral Distribution

Relative Intensity vs. Wavelength
Condition : Ta = 25℃, I_F = 20mA



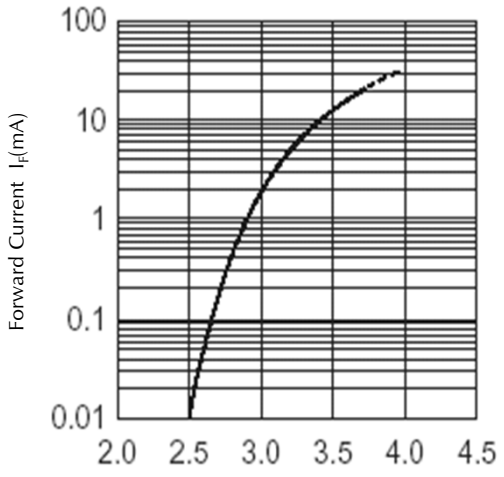
Spatial Distribution Example

Condition : Ta = 25℃



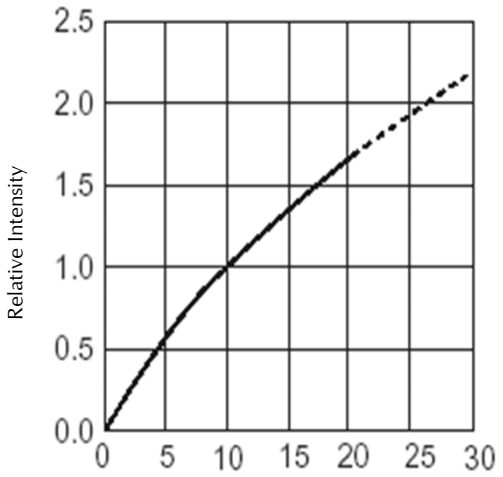
Forward Voltage vs. Forward Current

Condition : Ta = 25℃



Forward Current vs. Relative Intensity

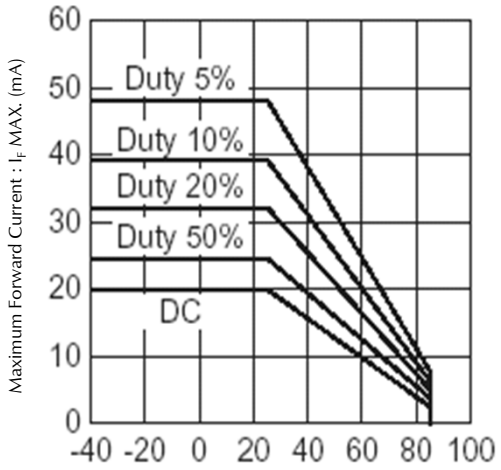
Condition : Ta = 25℃



Technical Data(**HUG**)

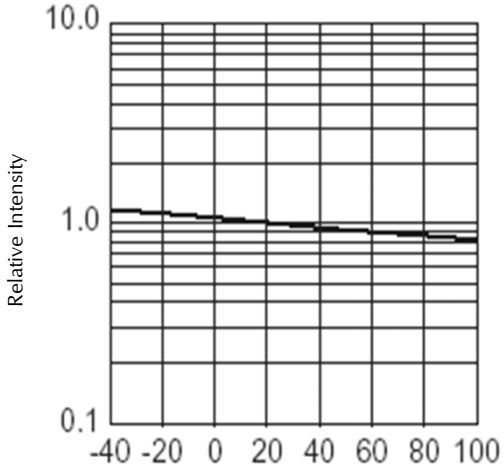
Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : f ≧ 50Hz

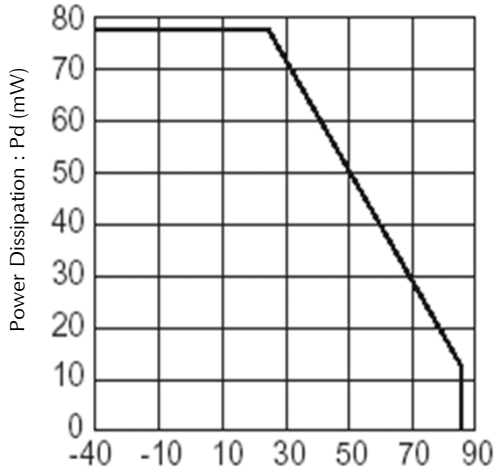


Ambient Temperature vs. Relative Intensity

Condition : I_F=20mA

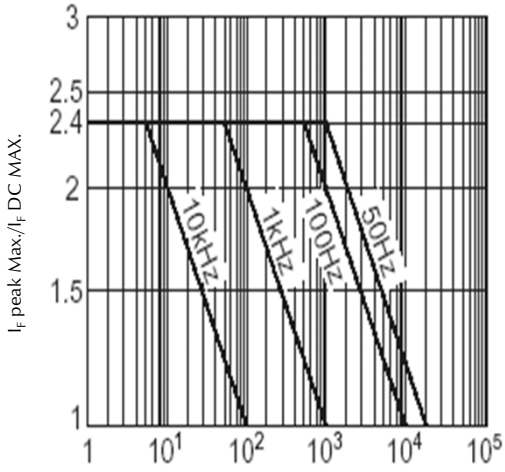


Power Dissipation vs. Ambient Temperature



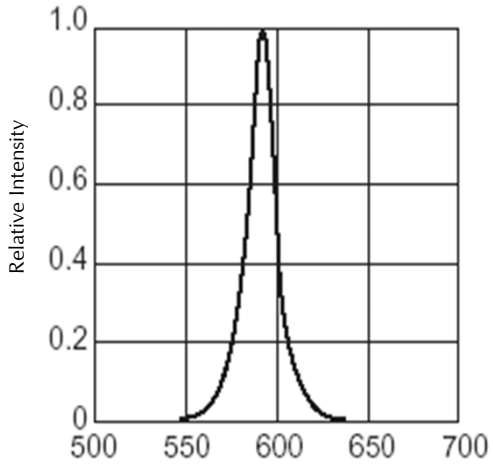
Pulse Width vs. Maximum Tolerable Peak Current

Condition : Ta = 25℃



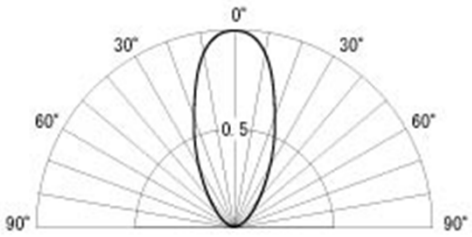
Technical Data(**UY**)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : Ta = 25℃, I_F = 20mA

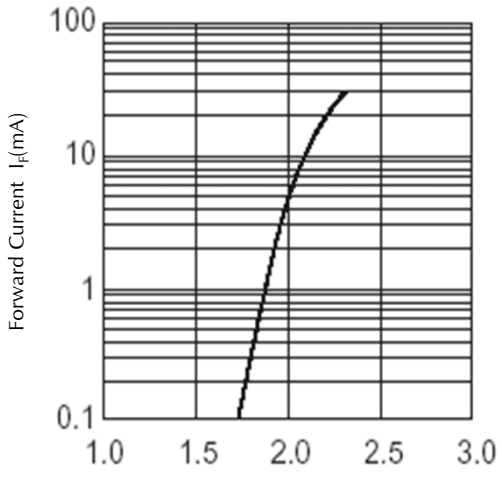


Spatial Distribution Example

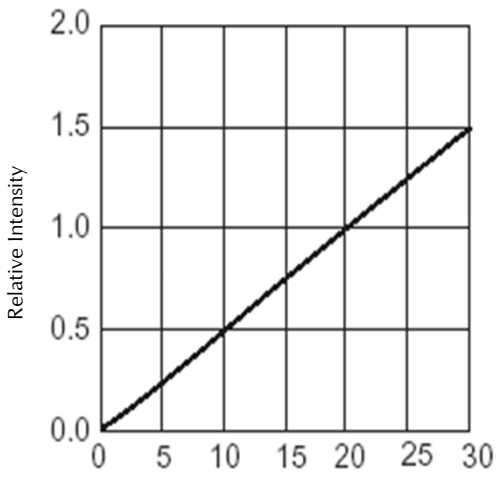
Condition : Ta = 25℃



Forward Voltage vs. Forward Current
Condition : Ta = 25℃

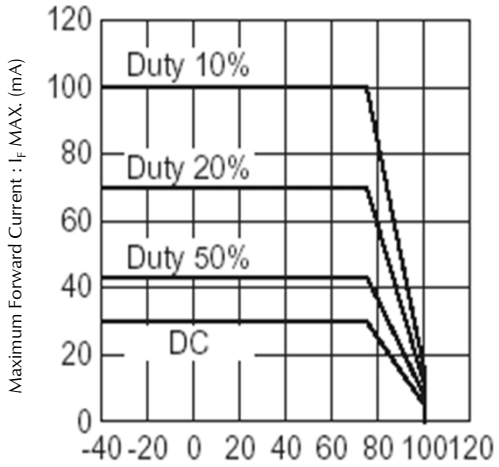


Forward Current vs. Relative Intensity
Condition : Ta = 25℃

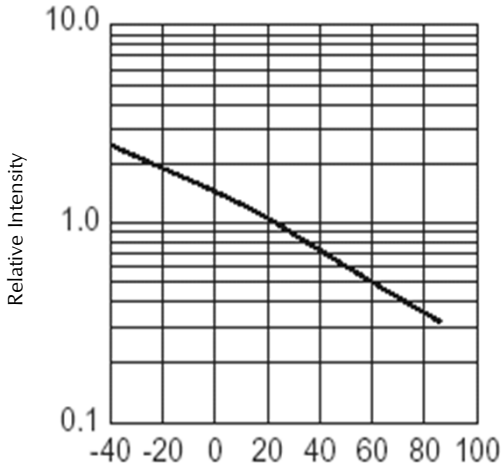


Technical Data(**UY**)

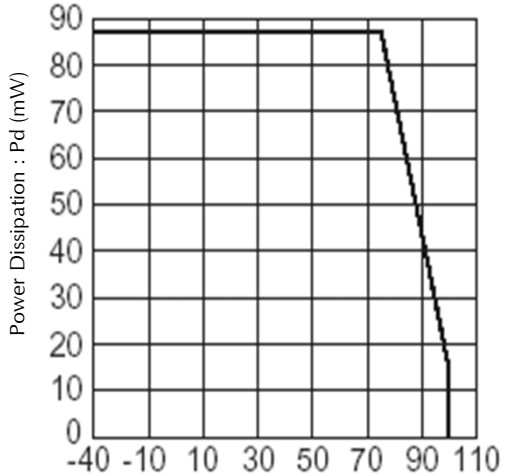
Derating
Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : f ≧ 50Hz



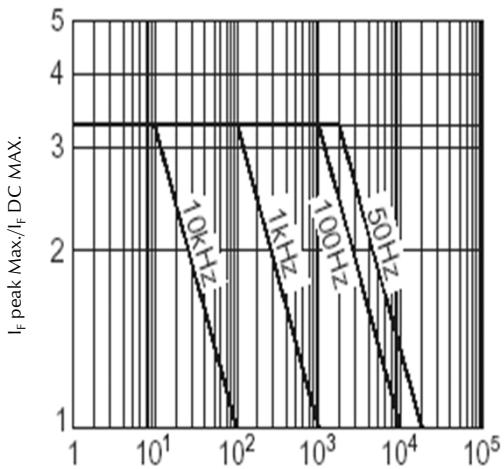
Ambient Temperature vs. Relative Intensity
Condition : I_F=20mA



Power Dissipation vs. Ambient Temperature

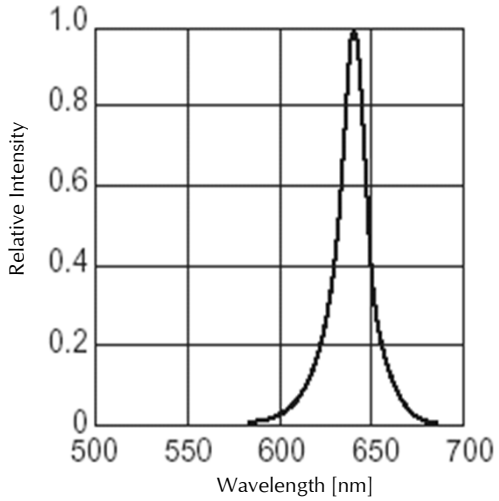


Pulse Width vs. Maximum Tolerable Peak Current
Condition : Ta = 25℃



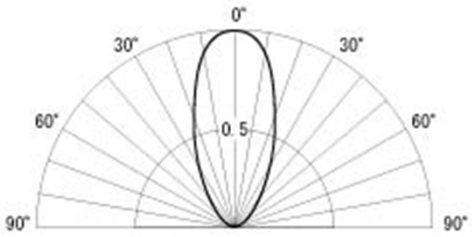
Technical Data(**UR**)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : Ta = 25℃, I_F = 20mA

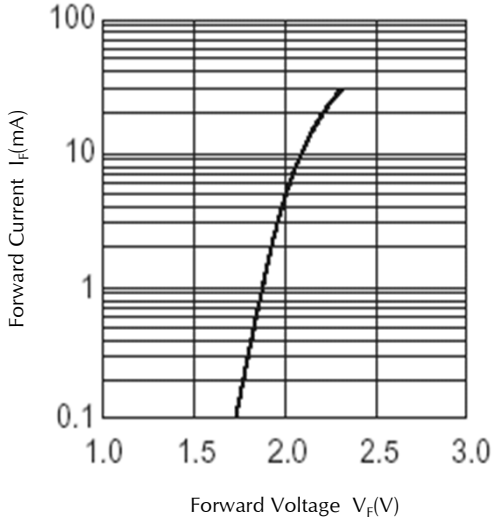


Spatial Distribution Example

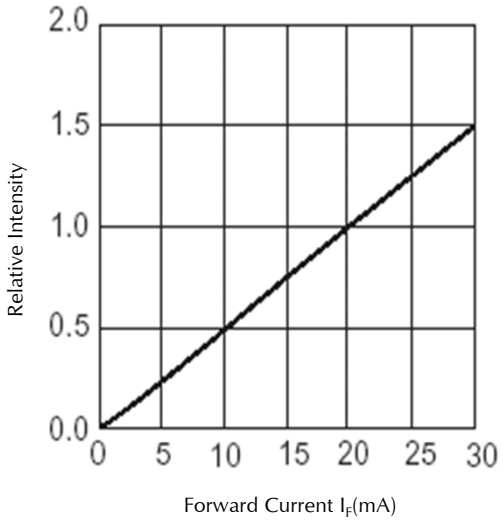
Condition : Ta = 25℃



Forward Voltage vs. Forward Current
Condition : Ta = 25℃



Forward Current vs. Relative Intensity
Condition : Ta = 25℃

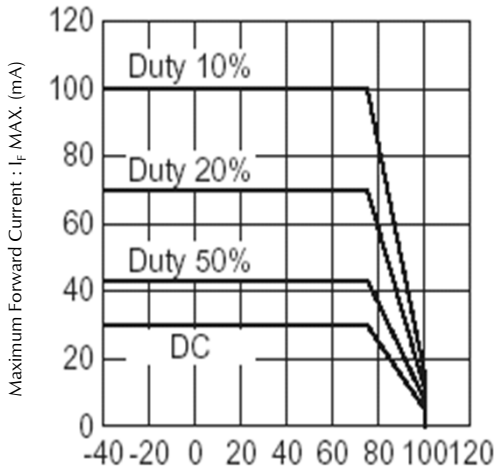


Technical Data(**UR**)

Derating

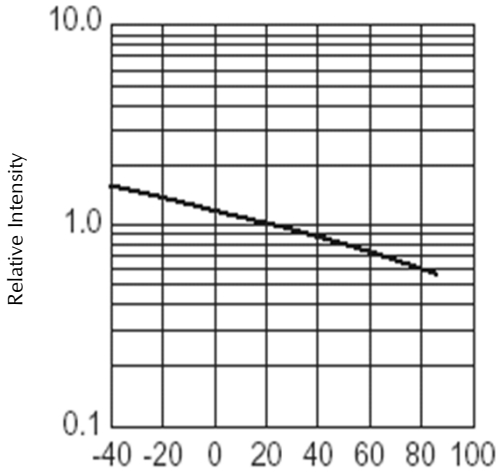
Ambient Temperature vs. Maximum Forward Current

Repetition Frequency : f ≧ 50Hz

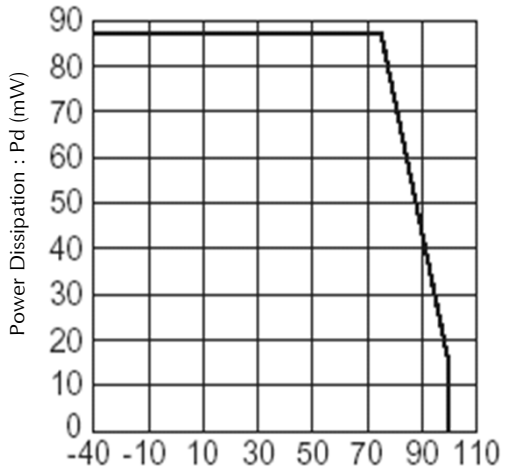


Ambient Temperature vs. Relative Intensity

Condition : I_F=20mA

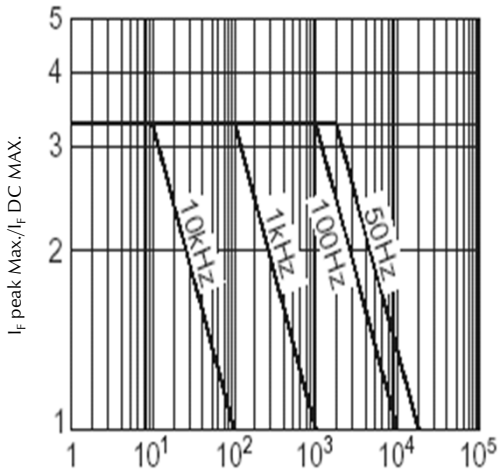


Power Dissipation vs. Ambient Temperature



Pulse Width vs. Maximum Tolerable Peak Current

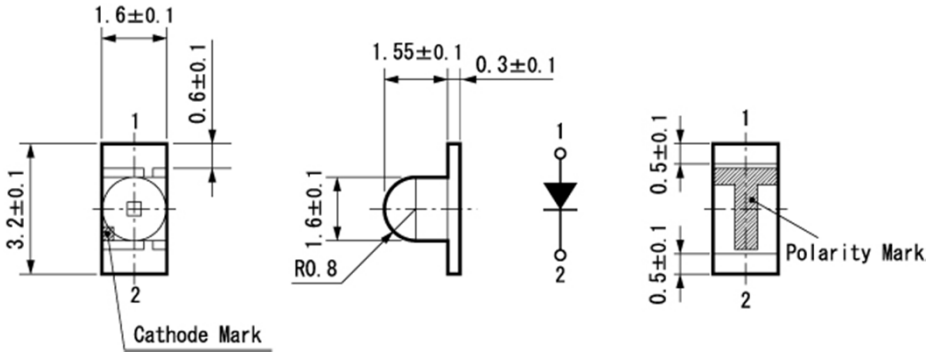
Condition : Ta = 25℃



Package Dimensions

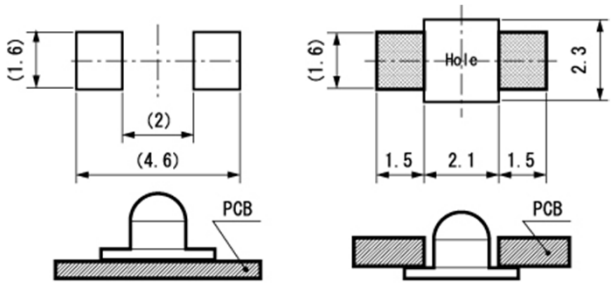
(Unit: mm)

Weight: (7.81)mg



Recommended Soldering Pattern

(Unit: mm)



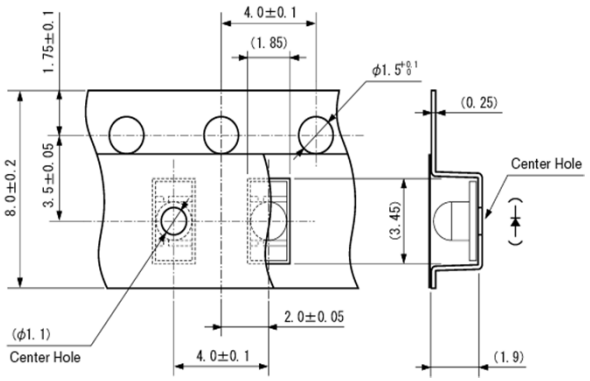
Surface Mount Reverse Mount

Taping Specification

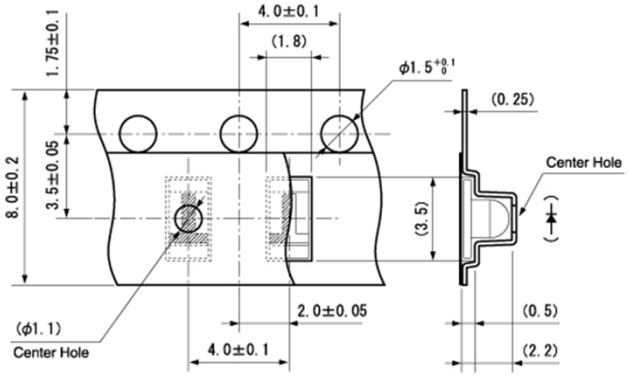
(Unit: mm)

Quantity : 2,000pcs/ reel (standard)

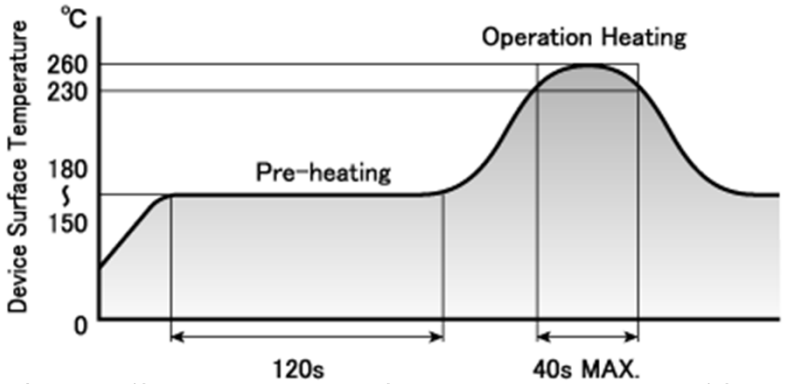
1105W-TR (Surface Mount)



1105W-RR (Reverse Mount)



Reflow Soldering Conditions



1) The above profile temperature gives the maximum temperature of the LED resin surface. Please set the temperature so as to avoid exceeding this range.

2) Total times of reflow soldering process shall be no more than 2 times. When the second reflow soldering process is performed, intervals between the first and second reflow should be short as possible (while allowing some time for the component to return to normal temperature after the first reflow) in order to prevent the LED from absorbing moisture.

3) Temperature fluctuation to the LED during the pre-heating process shall be minimized.

Manual Soldering Conditions

Iron tip temp.	350 ℃	(MAX.)
Soldering time and frequency	3 s 1 time	(MAX.) (MAX.)

Reliability Testing Result(**HUB,HUC,HUG**)

Reliability Testing Result	Applicable Standard	Testing Conditions	Duration	Failure
Room Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = 25℃, I_F = Maxium Rated Current	1,000 h	0/25
Resistance to Soldering Heat	EIAJ ED-4701/300(301)	Pre-heating : 150～180℃ 120s Max. Operation Heating : 230℃ 40s Max. Peak Temperature : 260℃	Twice	0/25
Temperature Cycling	EIAJ ED-4701/100(105)	Minimum Rated Storage Temperature(30min) ～Normal Temperature(15min) ～Maximum Rated Storage Temperature(30min) ～Normal Temperature(15min)	5 cycles	0/25
Wet High Temp. Storage Life	EIAJ ED-4701/100(103)	Ta = 60±2℃, RH = 90±5%	1,000 h	0/25
High Temp. Storage Life	EIAJ ED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/25
Low Temp. Storage Life	EIAJ ED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/25
Vibration, Variable Frequency	EIAJ ED-4701/400(403)	98.1m/s^2 (10G), 100 ～ 2KHz sweep for 20min., XYZ each direction	2 h	0/10

Reliability Testing Result(**SB,SG,UY,UR**)

Reliability Testing Result	Applicable Standard	Testing Conditions	Duration	Failure
Room Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = 25℃, I_F = Maxium Rated Current	1,000 h	0/25
Resistance to Soldering Heat	EIAJ ED-4701/300(301)	Pre-heating : 150～180℃ 120s Max. Operation Heating : 230℃ 40s Max. Peak Temperature : 260℃	Twice	0/25
Temperature Cycling	EIAJ ED-4701/100(105)	Minimum Rated Storage Temperature(30min) ～Normal Temperature(15min) ～Maximum Rated Storage Temperature(30min) ～Normal Temperature(15min)	200 cycles	0/25
High Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = Maximum Rated Operating Temperature I_F = 17.4mA(SB,SG)／5mA(UR,UY)	1,000 h	0/25
Humidity Temp. Operating Life	EIAJ ED-4701/100(102)	Ta = 60±2℃, RH = 90±5%, I_F = Maximum Rated Current	1,000 h	0/25
High Temp. Storage Life	EIAJ ED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/25
Low Temp. Storage Life	EIAJ ED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/25
Vibration, Variable Frequency	EIAJ ED-4701/400(403)	98.1m/s^2 (10G), 100 ～ 2KHz sweep for 20min., XYZ each direction	2 h	0/10

Failure Criteria

Items	Symbols	Conditions	Failure criteria
Luminous Intensity	I_V	I_F Value of each product Luminous Intensity	Testing Min. Value ＜ Spec. Min. Value x 0.5
Forward Voltage	V_F	I_F Value of each product Forward Voltage	Testing Max. Value ≧ Spec. Max. Value x 1.2
Reverse Current	I_R	V_R = Maximum Rated Reverse Voltage V	Testing Max. Value ≧ Spec. Max. Value x 2.5
Cosmetic Appearance	-	-	Occurrence of notable decoloration, deformation and cracking

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1) The technical information shown in the data sheets are limited to the typical characteristics and circuit examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license.

2) For the purpose of product improvement, the specifications, characteristics and technical data described in the data sheets are subject to change without prior notice. Therefore it is recommended that the most updated specifications be used in your design.

3) When using the products described in the data sheets, please adhere to the maximum ratings for operating voltage, heat dissipation characteristics, and other precautions for use. We are not responsible for any damage which may occur if these specifications are exceeded.

4) The products that have been described to this catalog are manufactured so that they will be used for the electrical instrument of the benchmark (OA equipment, telecommunications equipment, AV machine, home appliance and measuring instrument).
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